

REMARKS

In view of the following remarks, Applicants respectfully request reexamination and reconsideration of the present application. No claims are currently being amended.

CLAIM REJECTIONS – 35 U.S.C. § 102

Legal Doctrine

“A claim is anticipated only if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. v. Union Oil. Co. of California, 814 F.2d 628, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.” Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Rejection

The Examiner has rejected all of the pending claims (Claims 18, 24-27, and 72-94) under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,173,457 to Shorthouse.

The Examiner states that Shorthouse discloses a paste composition comprising a dielectric component of substantially spherical particles having a particle size below 5 µm. The dielectric component is preferably a powder having a particle size range of 0.1 to 3 µm and having a spherical shape. The size is greatly controlled with essentially no particles outside the range, i.e., the powder is monodispersed. The dielectric material is preferably a glass containing oxides of silicon, boron and aluminum. The preferred glasses include borosilicates, aluminosilicates, and aluminoborosilicates. The particles may be heated to form porosity in the particles and subsequent heating further causes the particles to coalesce to decrease the porosity and form a glass material. Example 1 indicates that the dielectric component is a borosilicate having 20 percent boron and 80 percent silicon as oxides and having a particle size in the range of 0.1 to 5 µm. The Examiner concludes that all limitations of Claims 18, 24-27 and 72-94 are disclosed in Shorthouse. Applicants respectfully traverse this rejection.

Traversal

Independent Claim 18 is directed to a powder batch comprising lead-borosilicate glass particles. Shorthouse does not disclose or suggest *lead borosilicate* glass particles. Indeed, at Column 3, lines 24-27 Shorthouse discloses that:

“The materials may be a glass containing one or more of the oxides of silicon, boron, aluminum, phosphorous, magnesium and optionally lithium. *High atomic number elements, and sodium, should be avoided.*” (Emphasis Added)

Clearly, lead (atomic number 82) is a high atomic number element. Therefore, it is respectfully submitted that Shorthouse does not disclose or suggest lead-borosilicate glass particles which have the characteristics recited in independent Claim 18. Indeed, Shorthouse specifically teaches away from the use of borosilicate glasses containing high atomic number elements, such as lead.

Independent Claim 72 is also directed to lead-borosilicate glass particles. Therefore, it is respectfully submitted that Shorthouse also does not disclose or suggest the invention recited in independent Claim 72.

Independent Claim 82 recites a glass powder batch comprising composite glass particles, where the composite glass particles include a crystalline second phase dispersed throughout a glass phase. Further, the composite glass particles comprise no greater than about 0.1 atomic percent impurities. Shorthouse does not disclose or suggest such composite glass particles. Further, it does not appear that the method disclosed by Shorthouse for producing the glass particles would be amenable to the formation of glass particles having a crystalline second phase.

Further, Shorthouse does not disclose any glass particles having no greater than 0.1 atomic percent impurities. The Examiner refers to language in Example 1 of Shorthouse for the proposition that the glass particles comprise no greater than 0.1 atomic percent impurities. The language in Example 1 states “The resulting powder is a borosilicate of approximate composition 20% boron and 80% silicon, as oxides, and having a particle size in the range of 0.1 to 5 μm .” (Column 5, line 50-52). Shorthouse does not make any reference to the level of impurities in the particles.

It is respectfully submitted that the particles disclosed by Shorthouse also do not inherently possess an impurity level of not greater than 0.1 atomic percent. Indeed, it is likely that the particles of Shorthouse include at least impurities. It is disclosed at Column 3, lines 54-57 that:

"The particles lose volatile material on heating to about 150°C. Heating to about 350°C causes the particles to lose organic materials and form significant porosity."

As is known to those skilled in the art, the burn out of organics typically leaves impurities in the material, such as carbon. Therefore, it is respectfully submitted that independent Claim 82 is also allowable over the prior art of record.

Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecute and or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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